

CLAIMS

1. In a liquid crystal display (LCD) fabrication process,
a method for cleaning a resin residue, the method comprising:
forming an electrode layer;
5 forming a resin residue overlying a first area of the
electrode layer;
introducing a gas mixture including ozone into water to
create a moist ozone gas; and,
wet ashing the resin residue overlying the first area of the
10 electrode layer using the moist ozone gas.
2. The method of claim 1 further comprising:
following the forming of an electrode layer, forming an
interlayer film of resin overlying the electrode later;
15 patterning the resin interlayer;
forming a via to access the first area of the electrode
layer; and,
wherein forming a resin residue overlying a first area of
the electrode layer includes forming a resin residue in response to
20 forming the via.
3. The method of claim 1 wherein forming an
interlayer film of resin overlying an electrode layer includes forming
an interlayer film of resin having a thickness in the range of 100 to
25 1000 Angstroms (Å).

4. The method of claim 1 wherein introducing a gas mixture including ozone into water to create a moist ozone gas includes introducing a gas mixture of approximately 10 % ozone by molecular weight (wt %).

5

5. The method of claim 4 wherein introducing a gas mixture including ozone into water to create a moist ozone gas includes heating the water to a temperature of approximately 90 degrees C.

10

6. The method of claim 1 further comprising:
following wet ashing the resin residue overlying the first area of the electrode layer using the ozonated water, depositing a metal layer overlying the first area of the electrode to form a pixel electrode.

15

7. The method of claim 6 wherein depositing a metal layer overlying the first area of the electrode to form a pixel electrode includes depositing a metal layer material selected from the group including indium tin oxide (ITO) and aluminum overlying molybdenum.

20

8. The method of claim 1 wherein wet ashing the resin residue overlying the first area of the electrode layer using the moist ozone gas includes etching the resin residue at a rate of 200 Å per minute.

25

2025 RELEASE UNDER E.O. 14176

9. In a liquid crystal display (LCD) fabrication process, a method for repairing a resin interlayer surface, the method comprising:

- 5 forming an interlayer film of resin with a surface;
 dry etching the surface of the resin interlayer;
 in response to dry etching, damaging the resin interlayer surface;
 introducing a gas mixture including ozone into water to
10 create a moist ozone gas;
 wet ashing the resin interlayer surface using the moist ozone gas; and,
 in response to wet ashing the resin interlayer surface, repairing the damage caused by the dry etching.

- 15 10. The method of claim 9 further comprising:
 prior to forming an interlayer film of resin, forming an underlying electrode layer;
 following the forming of the interlayer film of resin,
20 patterning the resin interlayer; and,
 wherein dry etching the resin interlayer includes forming a via to access a first area of the electrode layer using a dry etching process.

11. The method of claim 9 wherein forming an interlayer film of resin includes forming an interlayer film of resin having a thickness in the range of 100 to 1000 Angstroms (Å).

5 12. The method of claim 9 wherein introducing a gas mixture including ozone into water to create a moist ozone gas includes introducing a gas mixture of approximately 10 % ozone by molecular weight (wt %).

10 13. The method of claim 12 wherein introducing a gas mixture including ozone into water to create a moist ozone gas includes heating the water to a temperature of approximately 90 degrees C.

15 14. The method of claim 9 further comprising:
following wet ashing the resin interlayer surface using the moist ozone gas, depositing a metal layer overlying the resin interlayer surface and the first area of the electrode to form a pixel electrode.

20 15. The method of claim 14 wherein depositing a metal layer overlying the resin interlayer surface and the first area of the electrode to form a pixel electrode includes depositing a metal layer material selected from the group including indium tin oxide (ITO) and aluminum overlying molybdenum.

25

16. The method of claim 9 wherein wet ashing the resin interlayer surface using the moist ozone gas includes etching the resin interlayer surface at a rate of 200 Å per minute.

5 17. The method of claim 9 wherein wet ashing the resin interlayer surface using the moist ozone gas includes etching the resin interlayer surface a thickness in the range of 100 to 500 Å.

10 18. The method of claim 9 wherein dry etching the surface of the resin interlayer includes dry etching with a plasma including CF₄ and O₂.

15 19. In a liquid crystal display (LCD) fabrication process, a method for repairing a resin interlayer surface, the method comprising:

forming an electrode;
forming an interlayer film of resin with a surface,
overlying an electrode later;
patterning the resin interlayer;
20 dry etching the surface of the resin interlayer to form a
via to a first area of the electrode;
in response to dry etching, damaging the resin interlayer
surface;
introducing a gas mixture including ozone into water to
25 create a moist ozone gas;

wet ashing the resin interlayer surface using the moist ozone gas;

in response to wet ashing the resin interlayer surface, repairing the damage caused by the dry etching; and,

5 forming a pixel electrode overlying the first area of the electrode and the surface of the resin interlayer.

~~20.~~ In a liquid crystal display (LCD) fabrication process, a method for cleaning a resin residue, the method comprising:

10 forming an electrode layer;
 forming an interlayer film of resin overlying the electrode later;

 patterning the resin interlayer;
 forming a via to access the first area of the electrode
15 layer;

 in response to forming the via, forming a resin residue overlying the first area of the electrode;

 introducing a gas mixture including ozone into water to create a moist ozone gas;

20 wet ashing the resin residue overlying the first area of the electrode layer using the moist ozone gas; and,

 forming a pixel electrode overlying the first area of the electrode.

25

20250701 09:00:00